IN THE CLAIMS:

Please cancel claims 1-24 without prejudice or disclaimer, and substitute new Claims 25-48 therefor as follows:

Claims 1-24 (Cancelled).

25. (New) A station for processing a first signal which can be generated by a mobile terminal and belongs to a plurality of signals for mobile radio communications networks, comprising:

an input able to receive from an antenna the first signal associated with a first band and at least one adjacent signal of said plurality associated with a second band adjacent to that of the first signal;

a processing stage for generating from the first signal and from the at least one adjacent signal a first digital signal at a first sampling frequency, this first digital signal including a useful spectral content of the first signal and an interfering spectral content associated with said adjacent signal;

a digital filter for processing the first digital signal, attenuating the interfering spectral content, and for providing a filtered digital signal including at least part of said useful spectral content; and

a converter for generating from said filtered digital signal electromagnetic radiation to be transmitted on a waveguide.

26. (New) The station according to Claim 25, further comprising a sampling frequency reducer connected to said digital filter for generating a second digital signal having a second sampling frequency lower than said first frequency.

27. (New) The station according to Claim 25, wherein the processing stage comprises an analog filter having a passband such as to eliminate second signals of said plurality which are non-adjacent to the first signal and transmit a first electrical signal having said useful spectral content and said interfering spectral content.

28. (New) The station according to Claim 27, wherein said analog filter is a Chebyshey filter of 3^{rd} to 7^{th} order.

29. (New) The station according to Claim 27, further comprising a demodulator connected to said analog filter for demodulating the first electrical signal and generating at least one demodulated electrical signal associated with a third band and including at least portions of the useful spectral content of the first signal and the interfering spectral content of the adjacent signal.

30. (New) The station according to Claim 27, wherein said processing stage also comprises an analog-digital converter for converting an additional electrical signal correlated to the first electrical signal into said first digital signal.

31. (New) The station according to Claim 28, wherein said first sampling frequency is greater than or equal to double said passband of the analog filter.

32. (New) The station according to Claim 29, wherein said first sampling frequency is greater than or equal to double said third band of the demodulated electrical signal.

33. (New) The station according to claim 25, wherein said digital filter is an FIR filter with a number of taps such as to allow attenuation of the interfering spectral content.

34. (New) The station according to Claim 26, wherein the sampling frequency reducer comprises:

an anti-aliasing digital filter for filtering said filtered digital signal and having a cut-off frequency substantially equal to half of said second sampling frequency; and

a decimator for sampling a digital signal output from the anti-aliasing digital filter at said second sampling frequency.

35. (New) A method for processing a first signal which can be generated by a mobile terminal and belongs to a plurality of signals for mobile radio communications networks comprising the steps of:

receiving the first signal and second signals of said plurality including at least one signal adjacent to the first signal and interfering with the latter;

performing analog filtering of a first electrical signal corresponding to said first signal and to said second signals in order to eliminate the signals of said plurality which are non-adjacent to the first signal and transmit a second electrical signal having a useful spectral content associated with the first signal and an interfering spectral content associated with the adjacent signal;

converting from analog to digital the filtered first electrical signal so as to generate a digital signal, said conversion occurring at a first sampling frequency and defining a first transmission rate of said first digital signal;

performing digital filtering of the first digital signal in order to eliminate substantially the interfering spectral content and provide a first filtered digital signal including said useful spectral content; and

reducing the sampling frequency of said first filtered digital signal so as to obtain a second filtered digital signal to be sent on a first output bus and having a second transmission rate less than the first transmission rate.

36. (New) The method according to Claim 35, further comprising the steps of:

converting an electrical signal correlated to said first filtered digital signal into electromagnetic radiation; and

transmitting said electromagnetic radiation on a waveguide.

37. (New) The method according to Claim 35, further comprising a step of multiplexing on a second output bus the second filtered digital signal with additional digital signals associated with additional signals of said plurality which can be generated by additional mobile terminals.

38. (New) The method according to Claim 36, further comprising the steps of:

before said electrical to optical conversion step, performing a conversion, from parallel to serial, of the second filtered digital signal; and

processing the second serialized digital signal so as to generate a corresponding electrical signal in accordance with a transmission protocol relating to said optical waveguide.

39. (New) A mobile radio communications network comprising:

a main control center of the network for managing a plurality of signals;

a station for processing said signals controlled by said main control center, the processing station being provided with a port for receiving/transmitting electromagnetic radiation;

a waveguide having a first end connected to said output port; and

at least one antenna station for processing a first signal which can be generated by a mobile terminal and belongs to the plurality of signals, said station being connected to a second end of the waveguide and comprising:

an input able to receive from an antenna the first signal associated with a first band and at least one adjacent signal of said plurality associated with a second band adjacent to that of the first signal;

a processing state for generating from the first signal and from at least one adjacent signal a first digital signal at a first sampling frequency, this first digital signal including a useful spectral content of the first signal and an interfering spectral content associated with said adjacent signal;

a digital filter for processing the first digital signal, attenuating the interfering spectral content, and for providing a filtered digital signal including at least part of said useful spectral content; and

a converter for generating from said filtered digital signal electromagnetic radiation to be transmitted to the processing station by means of the waveguide.

40. (New) The mobile radio communications network according to Claim 39, further comprising a sampling frequency reducer connected to said digital filter for generating a second digital signal having a sampling frequency lower than said first frequency.

41. (New) The mobile radio communications network according to Claim 39, wherein said processing station includes processing apparatus for coding/decoding voice or data signals to be sent/received to/from said at least one antenna station.

42. (New) The mobile radio communications network according to Claim 41, wherein said processing station also includes a block for processing signals supplied from said apparatus so as to make them compliant with the modes of transportation on said waveguide.

43. (New) The mobile radio communications network according to Claim 39, wherein additional antenna stations provided with respective antennas are connected to said waveguide.

44. (New) The mobile radio communications network according to Claim 39, which operates by using a system of the Universal Mobile Telecommunication System type.

45. (New) The mobile radio communications network according to Claim 39, wherein said waveguide is an optical fiber.

46. (New) The mobile radio communications network according to Claim 43, wherein said waveguide forms a point-to-point link.

47. (New) The mobile radio communications network according to Claim 43, wherein said waveguide forms a ring connection between said antenna stations.

48. (New) The mobile radio communications network according to Claim 41, wherein a Synchronous Digital Hierarchy standard is used for transportation on said waveguide.